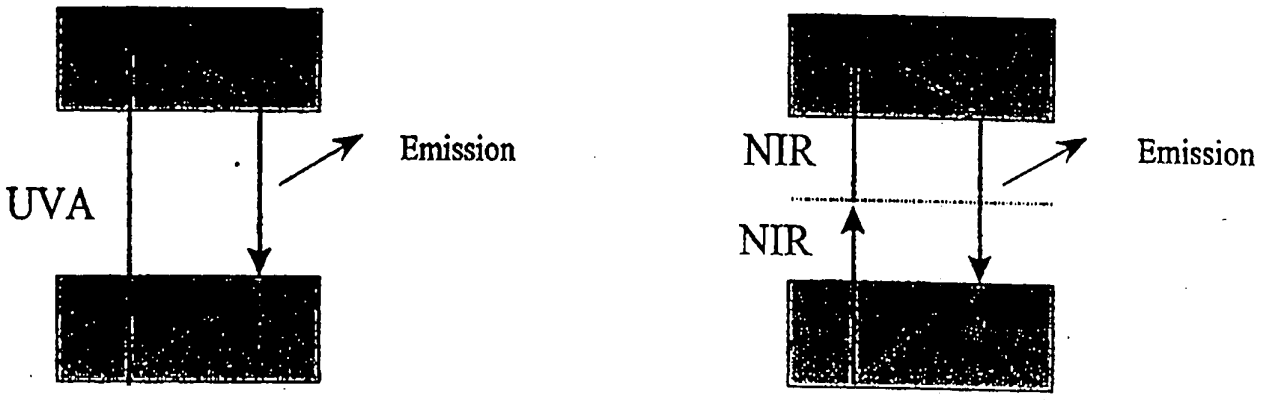


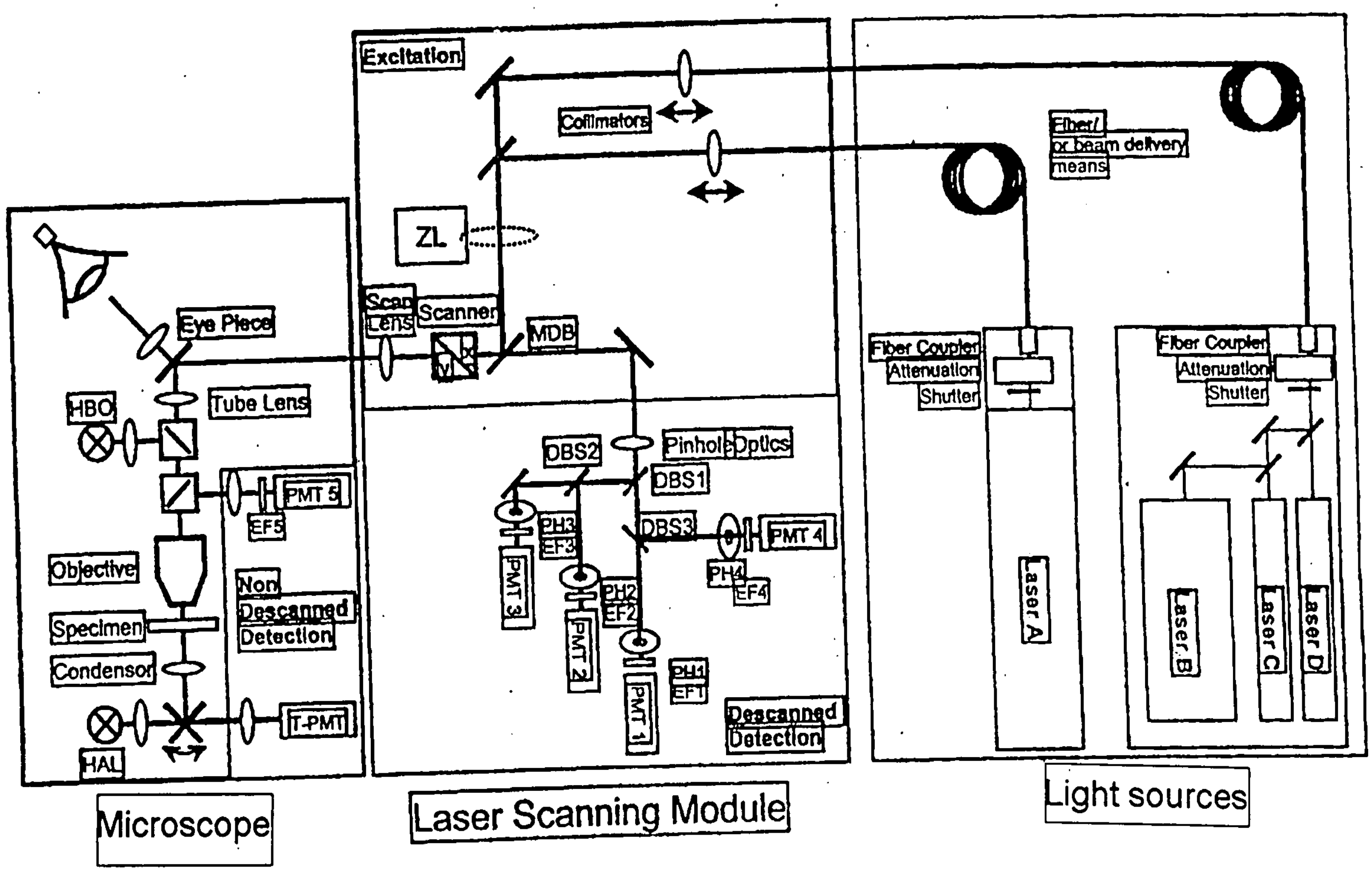
a.)

b.)

a) Single-photon absorption

b) Multiphoton absorption

Figure 1:



LSM construction (prior art)

Figure: 2

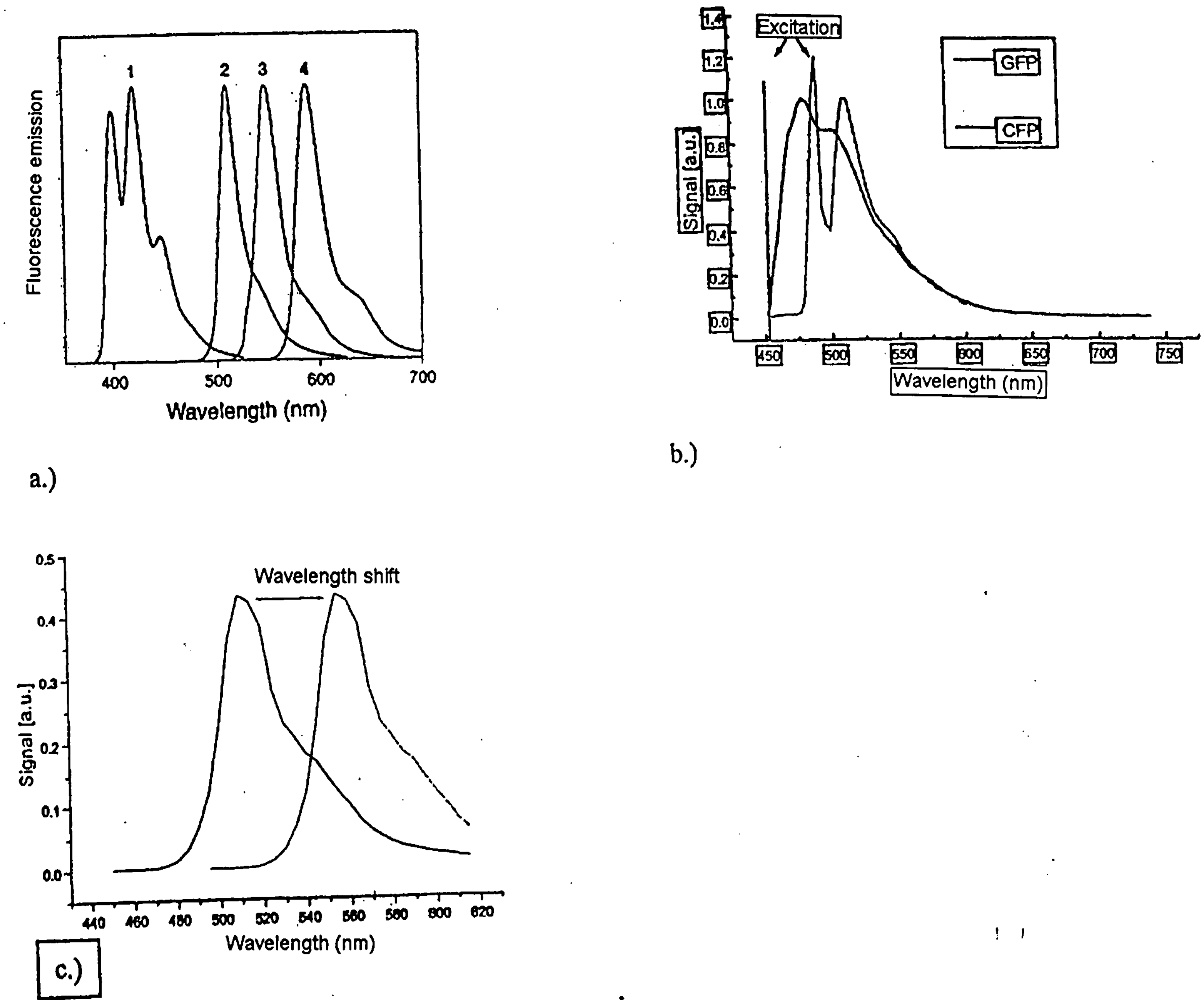


Figure: 3

Typical spectra a) Dyes, b) fluorescent proteins
c) wavelength shift as a function of environment, d) FRET

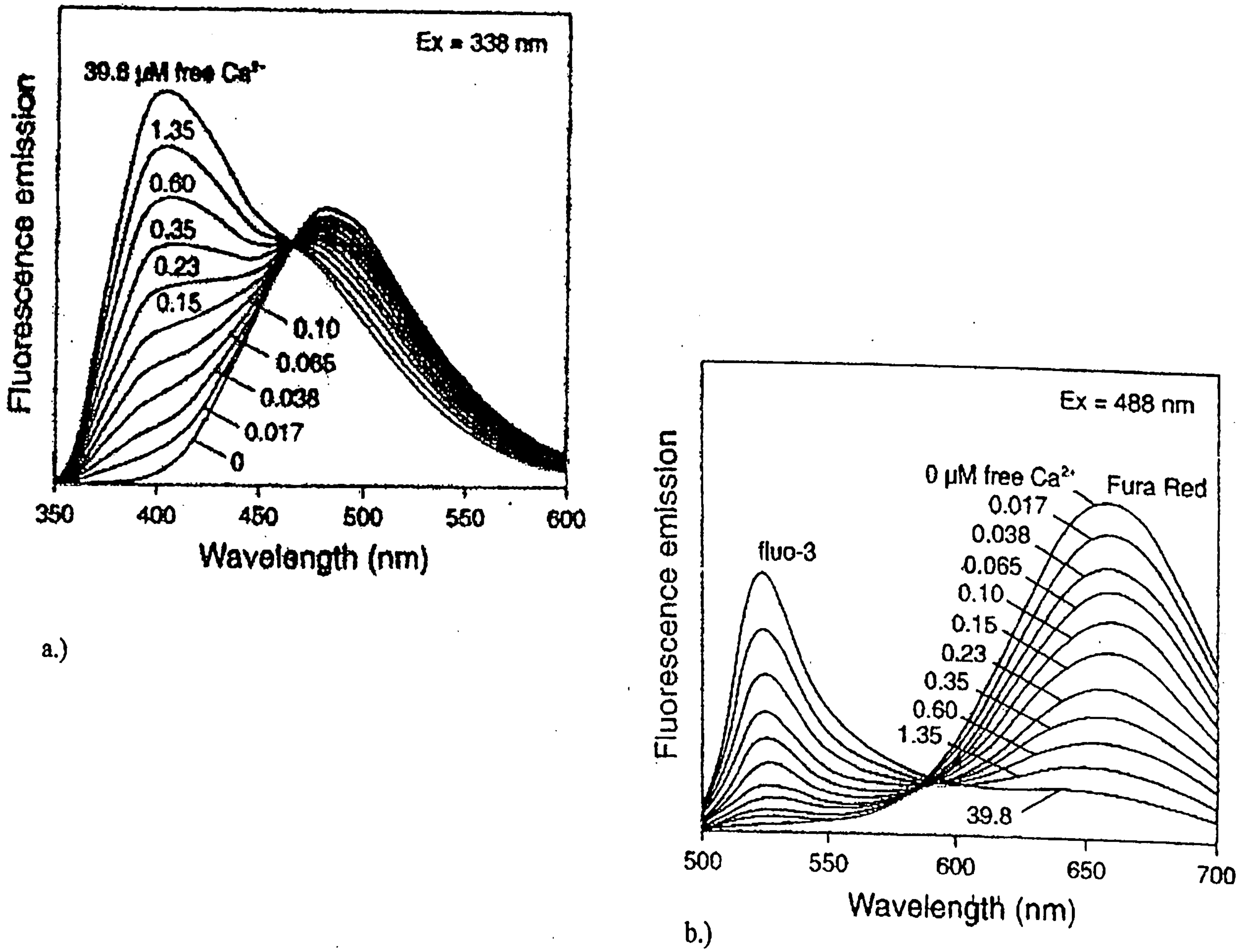
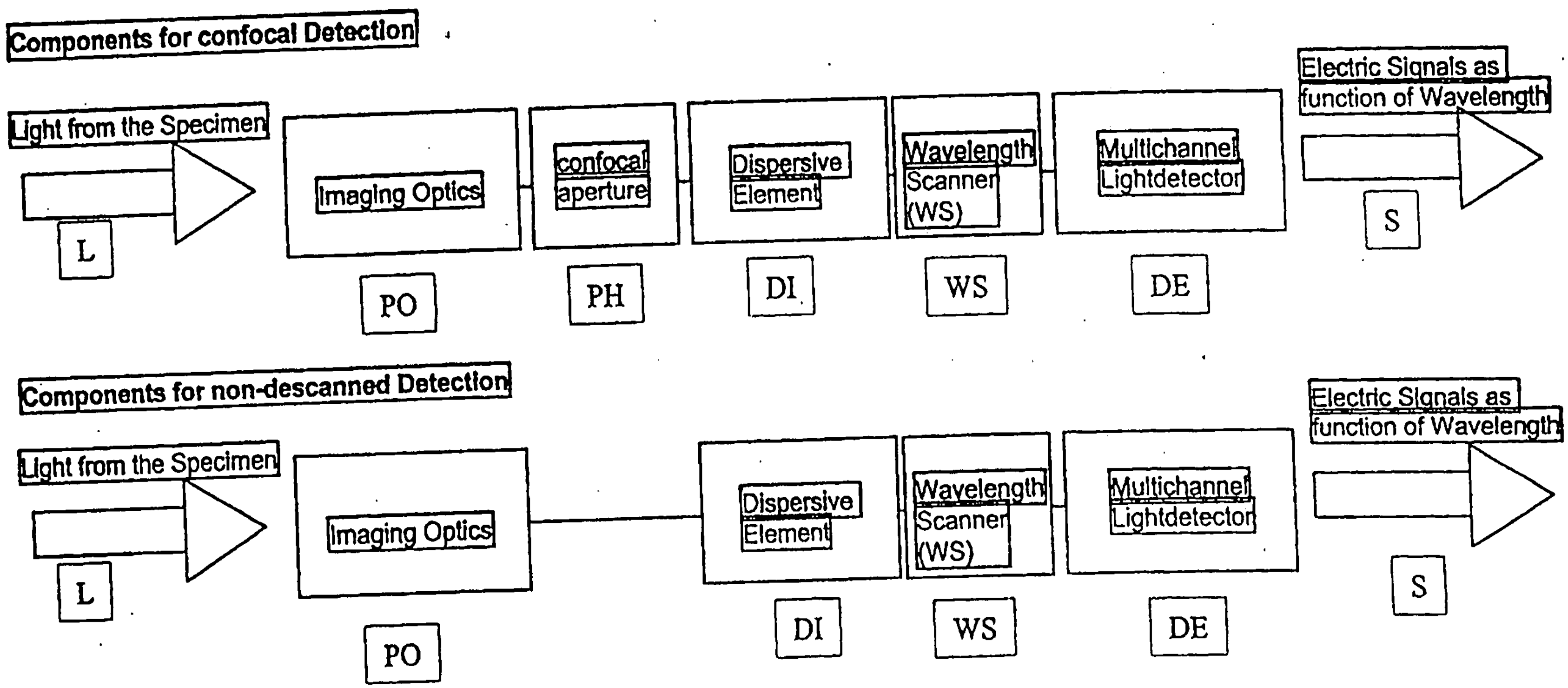


Figure: 4

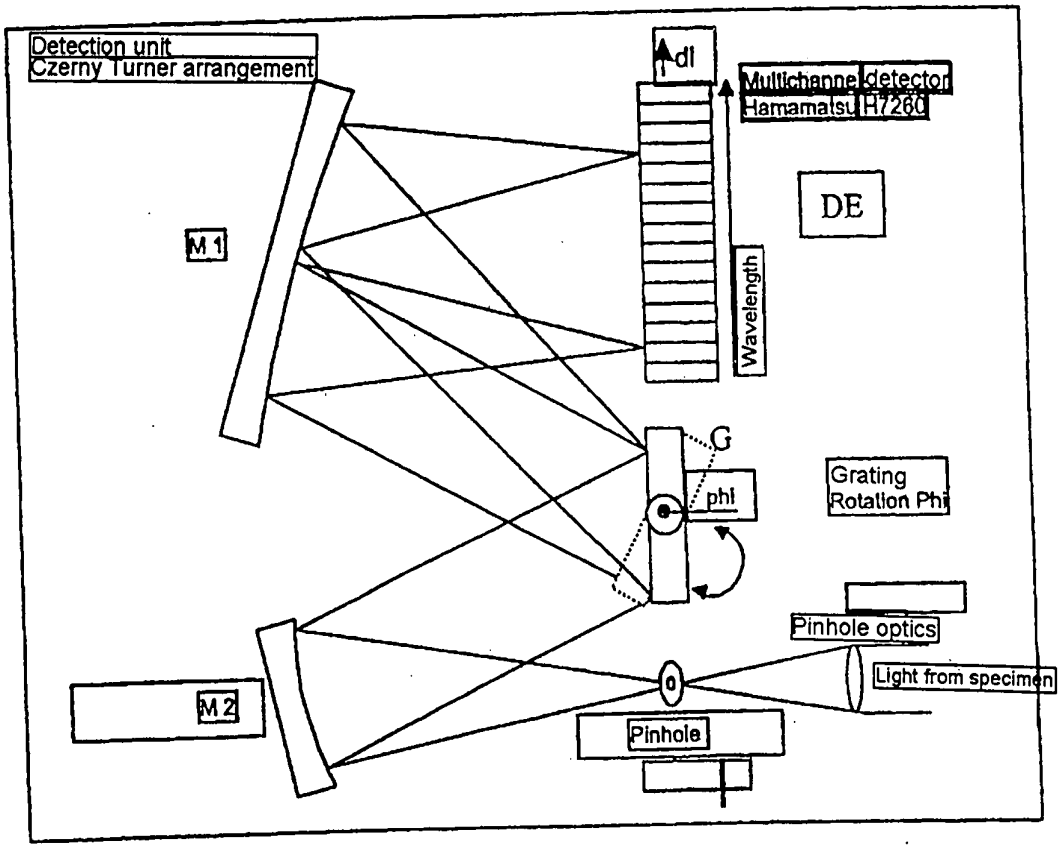
Typical spectra with ratiometric measurements

a) a dye with emission ratio; b) two dyes with ion-dependent signals



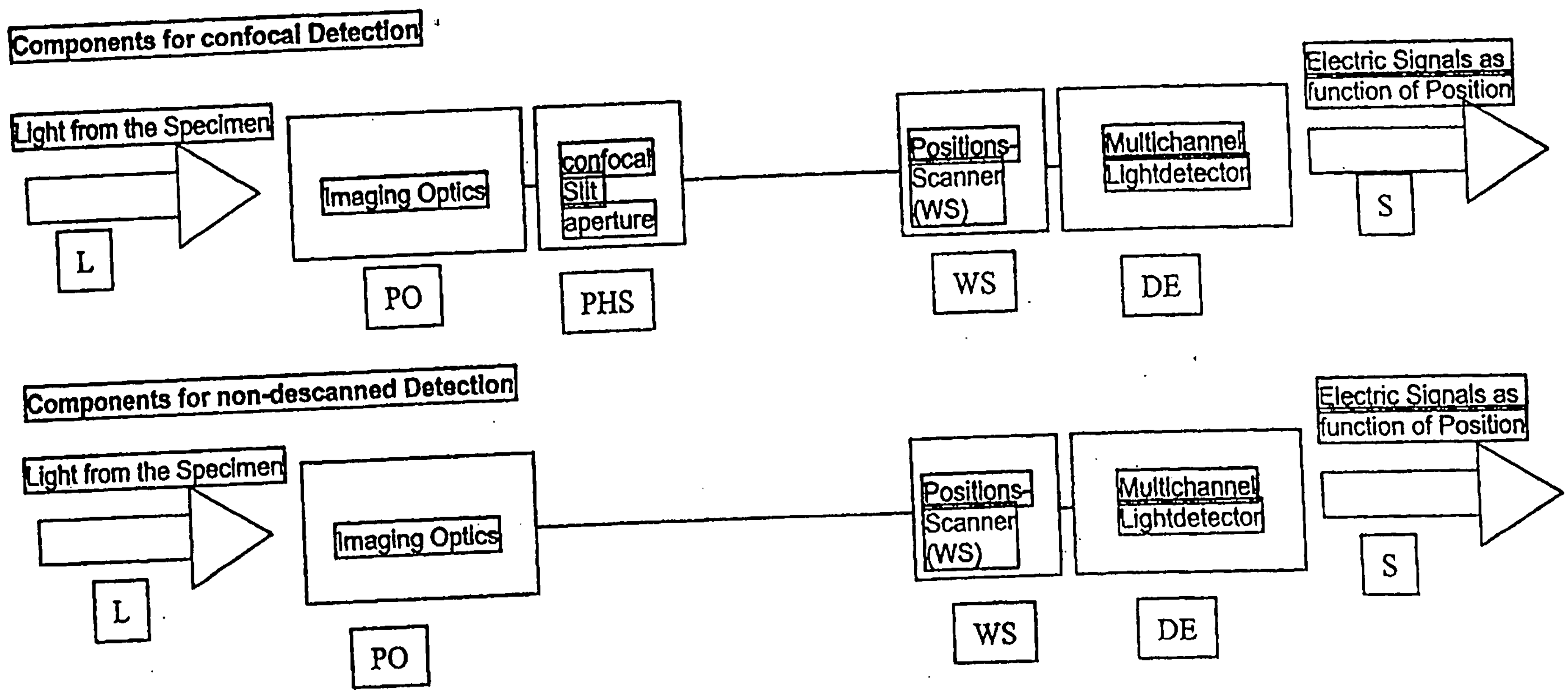
Block diagram of detector-optics construction

Figure: 5



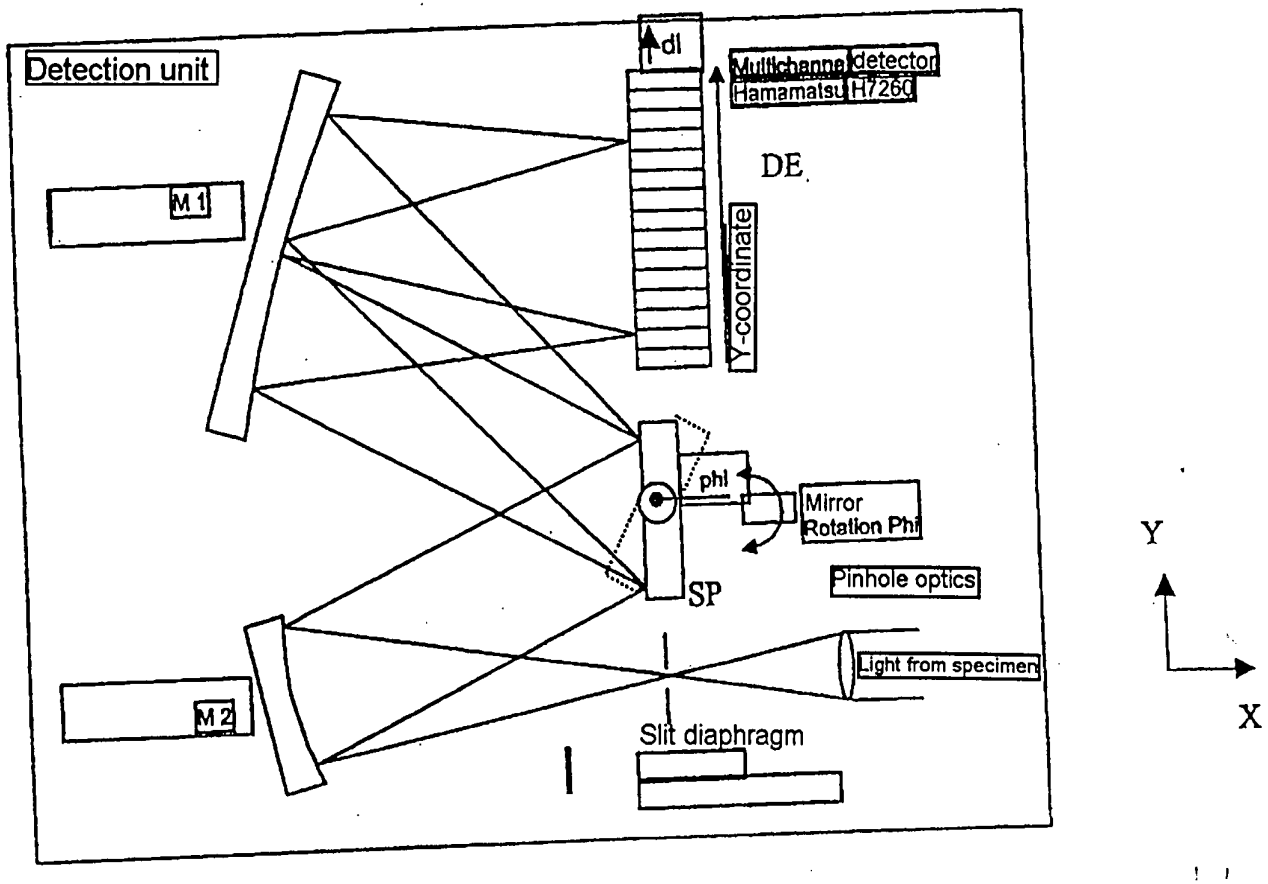
Example of detector unit/optics construction

Figure: 6



Block diagram of detector unit/optics construction for line scanner

Figure: 7



Example of detector unit/optics construction for line scanner

Figure: 8

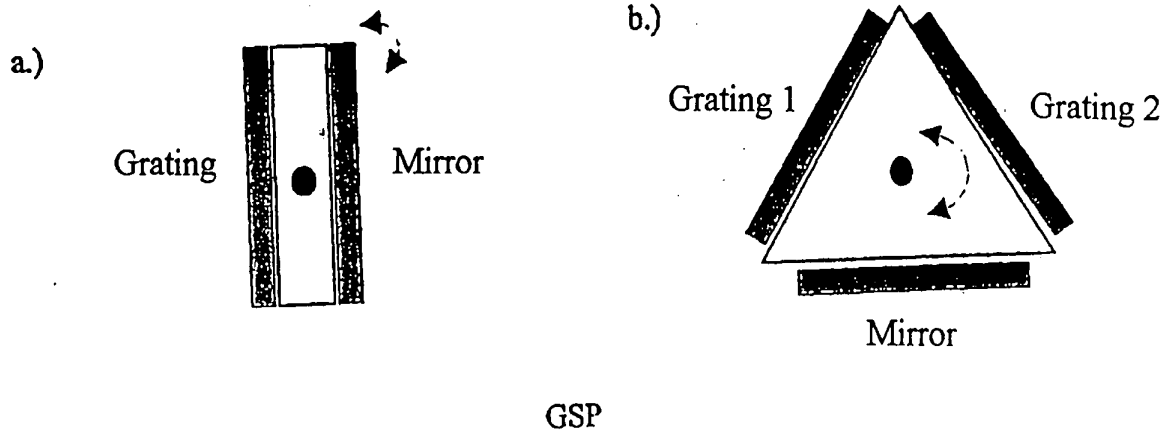
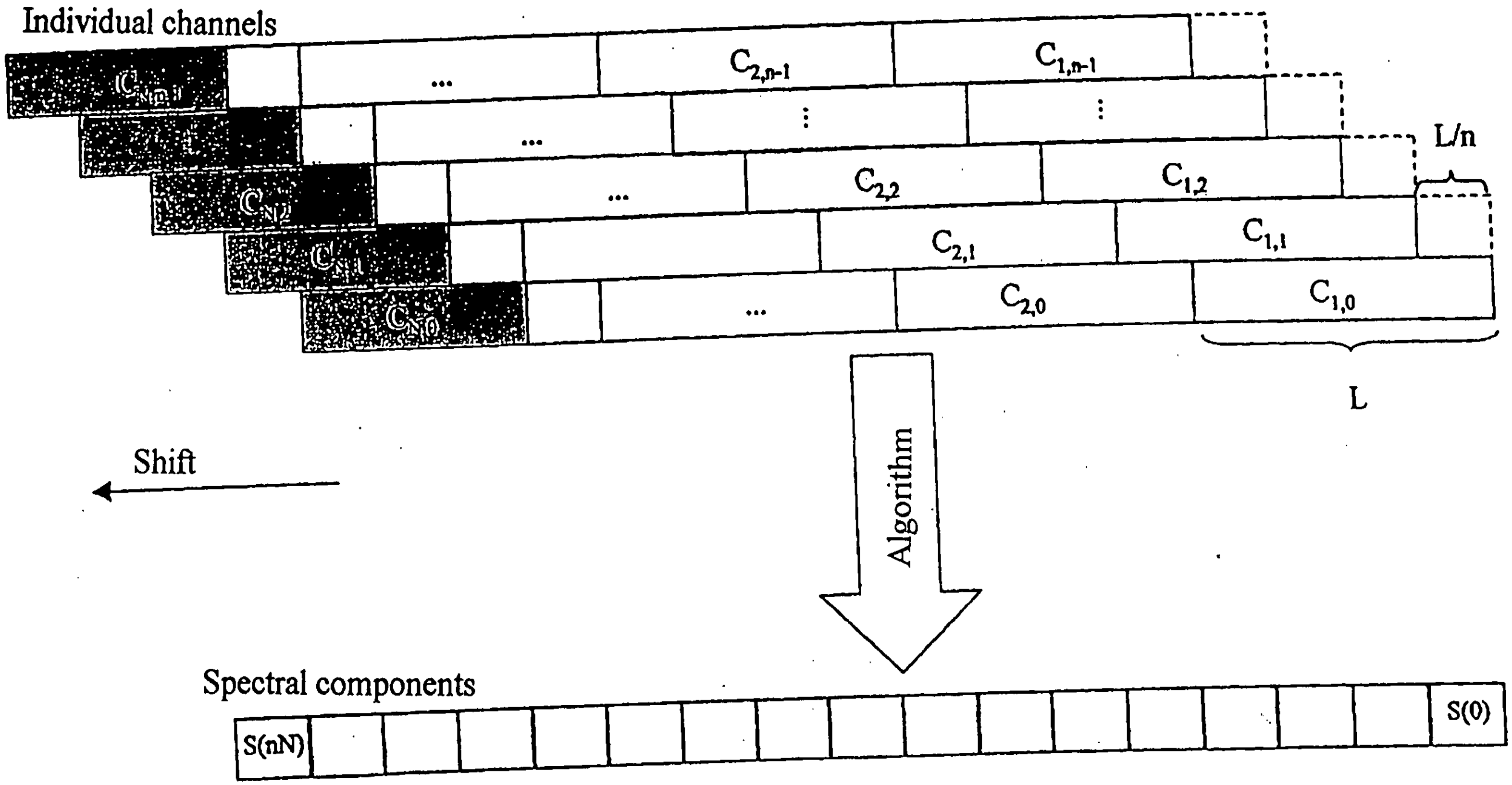

a.)
Grating
Mirror
b.)
Grating 1
Grating 2
Mirror
GSP
c.)
Grating
Mirror
Switching elements

Figure: 9



Algorithm **Pixelshift** (top) and calculated sub-pixels (bottom)

Figure: 10

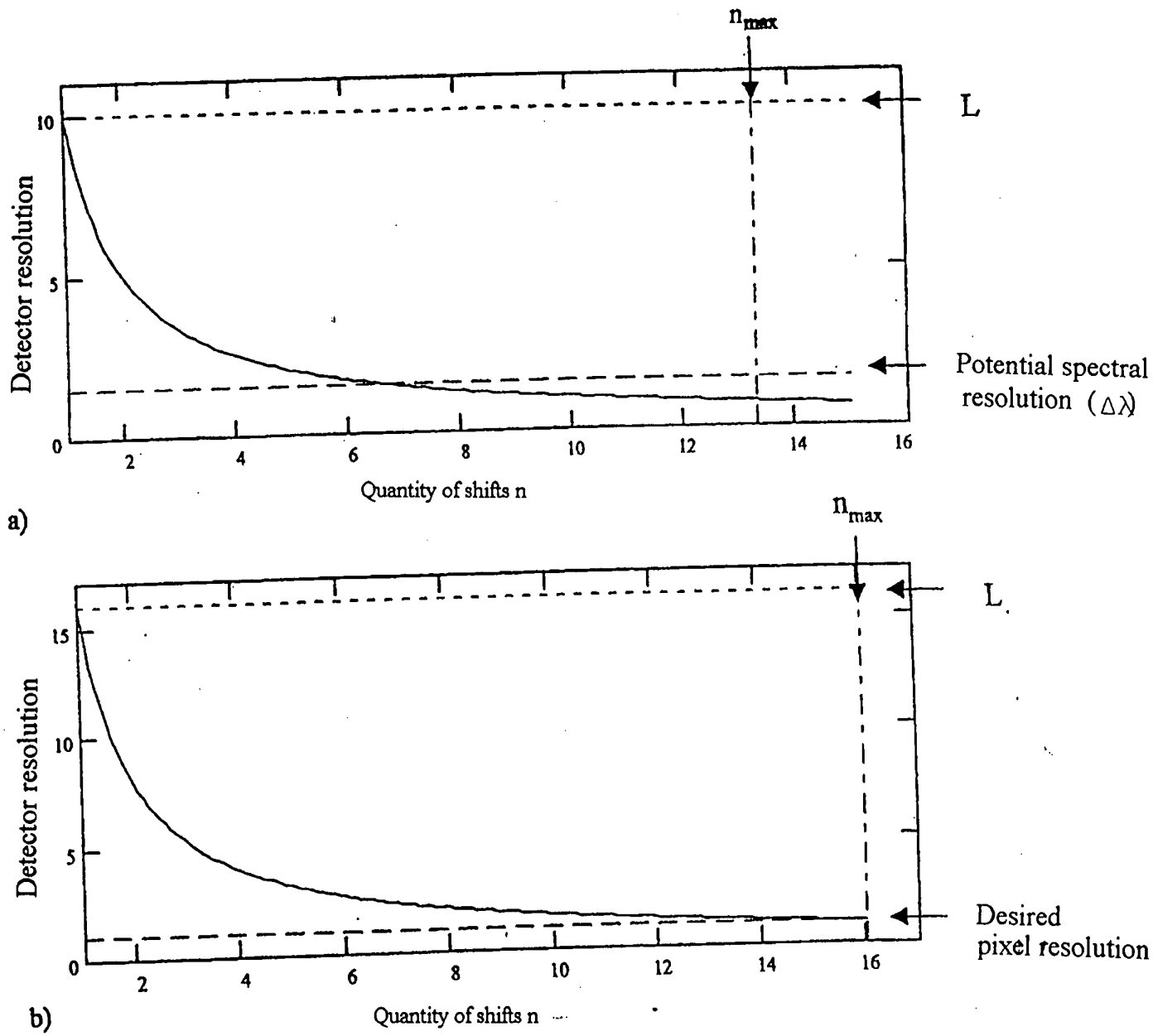
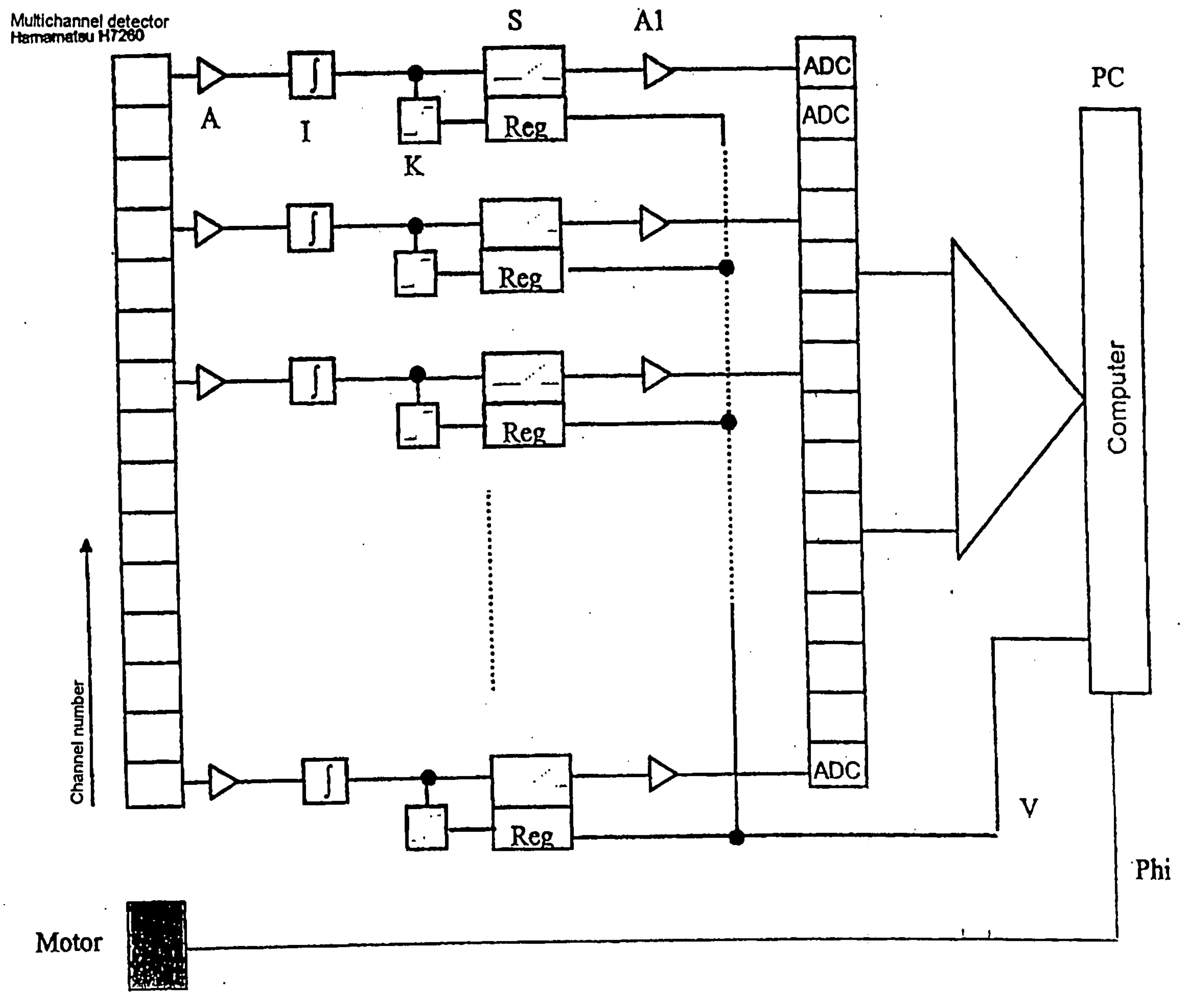
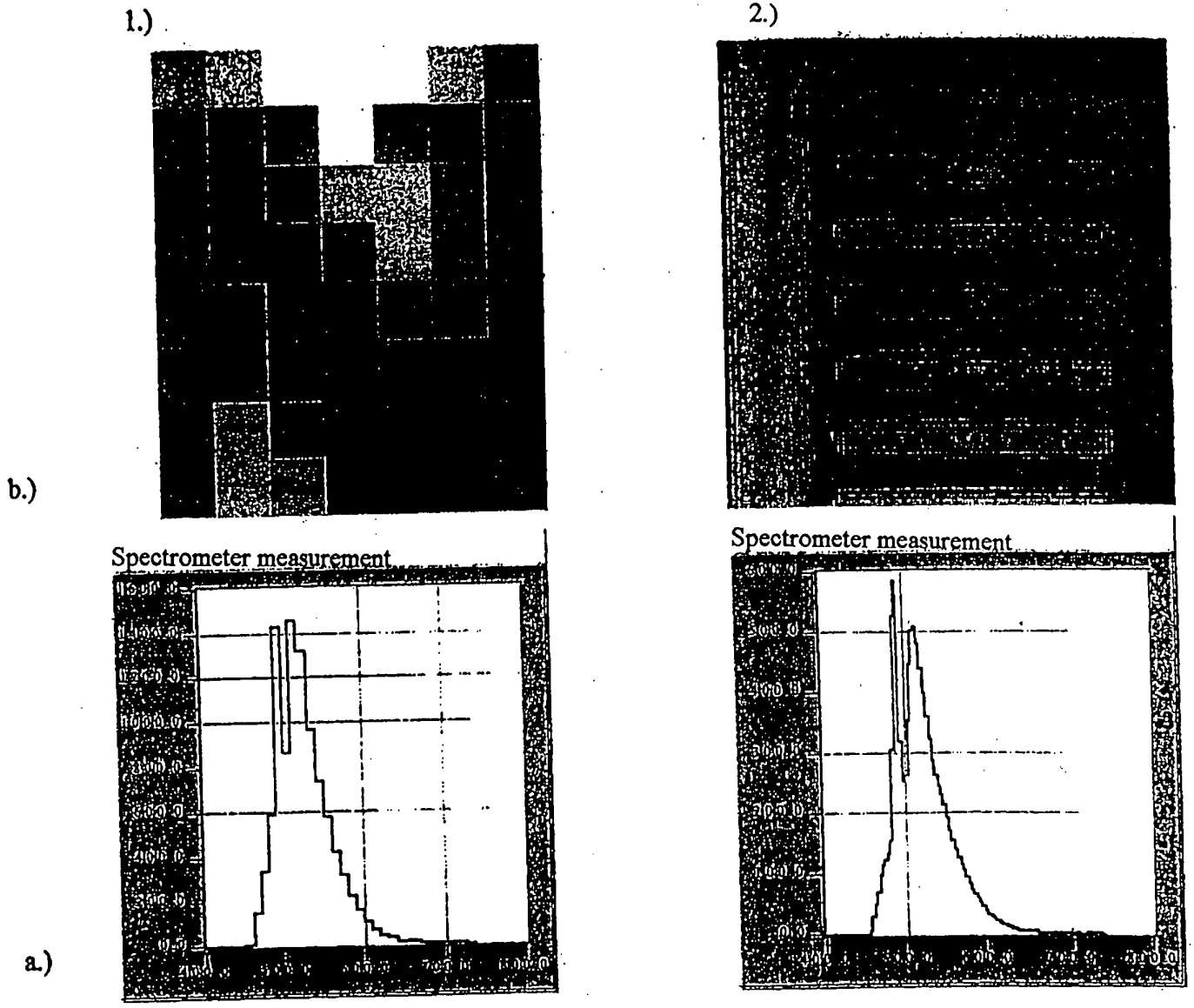

n_{max}
L
Detector resolution
10
5
0
2
4
6
8
10
12
14
16
Quantity of shifts n
Potential spectral resolution ($\Delta\lambda$)
a)
n_{max}
L
15
10
5
0
2
4
6
8
10
12
14
16
Detector resolution
Quantity of shifts n
Desired pixel resolution
b)

Figure: 11



Example for construction of electronics

Figure: 12



A.) Spectrum example. B.) Image example

Figure: 13